



POLICY BRIEF | WINTER 2021

# WOMEN, PEACE & SECURITY, AND THE DIGITAL ECOSYSTEM

## FIVE EMERGING TRENDS IN THE TECHNOLOGY AND GENDER POLICY LANDSCAPE

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### I. INTRODUCTION

The digital revolution has transformed society in fundamental ways, from politics, to financial systems, to social connections. In the international peace and security field, there are many emerging efforts to utilize technology tools and platforms to support conflict resolution in communities, democracy and civic engagement, human rights documentation, and local activism.

While technology offers immense potential for humanity, the digital ecosystem has also revealed a darker side - and it is closely intertwined with gender inequality, peace and security. From lack of participation and access, to gender-based bias, harassment, and abuse, women's experiences in the technology space and with digital platforms are often amplifying inequalities. These issues, much like in other facets of society, are not central priorities for technology leaders or policymakers. There are pockets of attention on gender dynamics, but they are siloed from one another, and this has prevented a full picture of the landscape or its broader implications.

Despite some calls for values-driven or human-centered technology development, and for embedding human rights into technology policy, international policy frameworks that underscore human rights and gender equality are largely missing from the conversation. The proliferation of disinformation, and the targeting of women and marginalized groups, such as LGBTQ+ communities, on Twitter, Facebook, TikTok, and other platforms, are repeating patterns and events in the digital ecosystem that have significant consequences for society.

### WHAT IS THE DIGITAL ECOSYSTEM?

According to the US Agency for International Development (USAID) Digital Strategy 2020-2024: A "digital ecosystem" comprises the stakeholders, systems, and enabling environments that together empower people and communities to use digital technology to gain access to services, engage with each other, or pursue economic opportunities.<sup>1</sup>

Women's experiences with the digital ecosystem are rarely considered either for their policy implications, or for their impact on business. For the private sector, a failure to consider gender equality in technology as a business imperative could mean millions in business lost every year. Gendered experiences with technology are not one-off problems.

This policy brief identifies five emerging trends that demonstrate system failures in the digital ecosystem, repeating events that affect at least 50 percent of technology companies' end-users--and half of the world's population. For policymakers, the costs of ignoring these trends could lead to new technology, peace and security structures, and processes that weaken core human rights and gender equality norms and obligations around the world.

Gendered experiences are a powerful indication of larger cracks in the digital ecosystem itself, and should be made central to technology and policy discussions. Twenty years of research and advocacy for the Women, Peace and Security agenda has demonstrated clearly that the treatment of women is not a side issue for national, regional or global security.

An escalation in the exclusion and mistreatment of women is one of the first signs of impending violence, instability, war and breakdown of society. Gender inequality and gender-based violence have been referred to as the “canary in the coal mine,” because these trends are so often the precursors of more widespread societal disruption.

This brief provides an initial analysis of gender equality in the digital ecosystem and finds that it is on a similar trajectory. Both technology development and technology policy are in urgent need of course correction. Gender dynamics on technology platforms and in the sector should be considered early warnings of larger, systemic problems.

## About the Project

Project Delphi was launched by Our Secure Future: Women Make the Difference to apply the Women, Peace and Security framework to the emerging digital ecosystem. The project seeks to identify systemic gender problems, analyze implications for peace and security, and develop more inclusive ways to approach technology norms and policies in the coming years.

This project:

- **IDENTIFIES THE EMERGING TRENDS ON TECHNOLOGY AND GENDER ACROSS SILOS THAT HAVE AN IMPACT ON PEACE AND SECURITY.** Uncover policy blind spots and invisible consequences on technology, peace and security through gender analysis.
- **UTILIZES FEMINIST METHODOLOGIES TO COLLECT UNCLASSIFIED INFORMATION FROM MULTIPLE STAKEHOLDERS AND A VARIETY OF COMMUNITIES THAT CAN BE USED ACROSS SECTORS,** within and across governments to create more informed conversations about technology, peace and security.
- **IDENTIFIES CHAMPIONS AND AREAS OF INNOVATION** that help support connections between Women, Peace and Security and technology policy decisions.
- **PROVIDES A FOUNDATION FOR THE WOMEN, PEACE AND SECURITY CIVIL SOCIETY COMMUNITY TO ENGAGE IN TECHNOLOGY-FOCUSED CONVERSATIONS** with policymakers and industry and to ensure that civil society has a seat at the table.

This brief is not a comprehensive landscaping of all relevant technology, peace and security and gender intersections, but rather an initial step to uncover both strategic blind spots and entry points for further analysis and action. By applying the Women, Peace and Security framework, we hope to offer a lens to better understand the significance of gendered dynamics for the digital ecosystem, and to create more technology development and technology governance that serves all of humanity.

## Methodology

The first stage of this project involved extensive research on the aspects of the digital ecosystem which relate to both gender equality and peace and security. We are unaligned with a government or company, and we used all open-source data.

During the first stage of this project, from 2019-2020, we conducted semi-structured interviews and conversations with more than 45 individuals who work in different aspects of the digital ecosystem. All interviewees were either self-described or described by their peers as seeking ways to develop systems that are more equitable, that are human-centered, and that improve chances of peace. The majority of our interviewees were unaware of the Women, Peace and Security agenda or the laws and policies that form part of this framework.

We conducted a desk review of more than 50 publications and webinars that are connected with the future of technology, women in technology, gender and data bias, the digital divide, women’s experiences with technology platforms such as social media, and national and international policy documents pertaining to digital and AI strategies.

## II. WHAT IS THE RELEVANCE OF WOMEN, PEACE AND SECURITY TO THE EMERGING DIGITAL ECOSYSTEM?

Women, Peace and Security is a global movement to ensure the full inclusion of women and gender perspectives in building peace and stability in the world. This global advocacy effort has been pressing for change in peace and security leadership and processes for more than two decades. Efforts by women and women-led civil society to build peace and be included in peace and security decision-making have been going on for much longer.

The Women, Peace and Security agenda is based on the notion of human security (a people-centered approach),<sup>2</sup> not just state security, and the recognition that all members of society are entitled to peace and security – not just those with weapons or power. Women, Peace and Security advocates for *both* women’s equal participation in decision-making and mainstreaming gender analysis through all aspects of peace and security.

There is now 20 years of history and experience from Women, Peace and Security research and advocacy. The evolution of this global agenda demonstrates that structures and processes that marginalize women’s voices on human rights and inclusion do not lead to sustainable peace and security.

This agenda has also shown that gender is far more than “women’s issues” that can be brushed aside. Gender equality is closely correlated with social stability, state security, rule of law and good governance. Research has demonstrated that the way in which women are treated in a society is a harbinger of that society’s stability and propensity for violence.<sup>3</sup>

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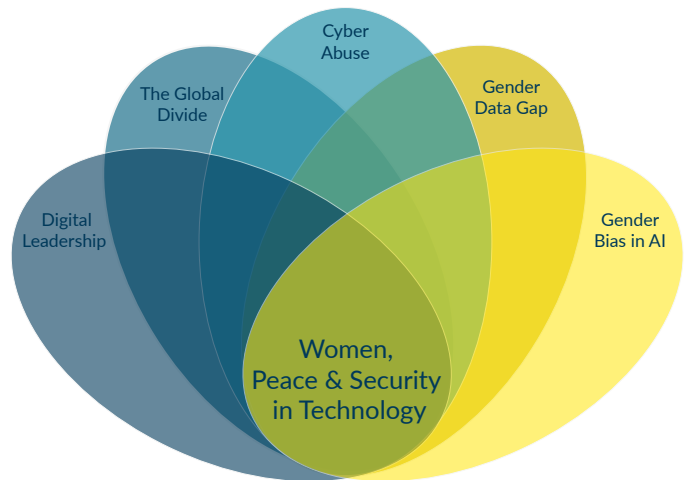
As a framework that prioritizes human security, Women, Peace and Security can be used to examine the digital ecosystem more holistically, including gendered dynamics and implications for the future of peace and security. The Women, Peace and Security agenda can also identify mechanisms that bring stakeholders together for meaningful dialogue and participatory decision-making, models that help us create and use technology in more inclusive and positive ways for all.

### WHAT IS WOMEN, PEACE AND SECURITY?

The Women, Peace and Security agenda emerged from difficult and dangerous environments – where violence between groups was rampant or had erupted into full scale war – and in the fragile and long-term search for peaceful co-existence in societies that had collapsed. This agenda is ground-up. Women without power or influence have stood up to autocrats and warlords and demanded that their voices are heard and their experiences and needs are valued. In 2000, the United Nations Security Council unanimously passed [Resolution 1325](#) (2000), establishing an international mandate that applies to all actors involved in conflict resolution.<sup>4</sup> Since then, more than 85 countries have adopted National Action Plans on Women, Peace and Security that specify the ways in which governments will implement the principles of this Resolution. The United States launched its own National Action Plan in December 2011 by Executive Order. In October 2017, the US passed its first law on Women, Peace and Security ([Public Law No: 115-68](#)).<sup>5</sup> It promotes women’s meaningful participation to prevent, mitigate, or resolve violent conflict. These mandates mean that both the international community and governments around the world, including the US, are obligated to support the full participation of women and to integrate gender analysis into peace and security decision-making.

## III. FIVE EMERGING TRENDS IN GENDER, TECHNOLOGY AND SECURITY

Gender inequality in various forms has now been widely recognized as a problem on two major fronts: how technology is created and who it benefits. Through interviews and a review of the literature, we found five main trends that relate to women’s experiences with the digital ecosystem. Conversations about gender and technology are occurring in many organizations, albeit with different vocabulary and frameworks depending on sector. This has made it extremely difficult to identify repeating patterns of gender inequality in the technology space, to understand wider implications for human security, or to take a systems-level approach to rectifying embedded problems in the technology ecosystem. When examined together, these trends are early warning signals about the digital ecosystem and where it is heading.



### 5 TRENDS IN GENDER, TECHNOLOGY, & SECURITY

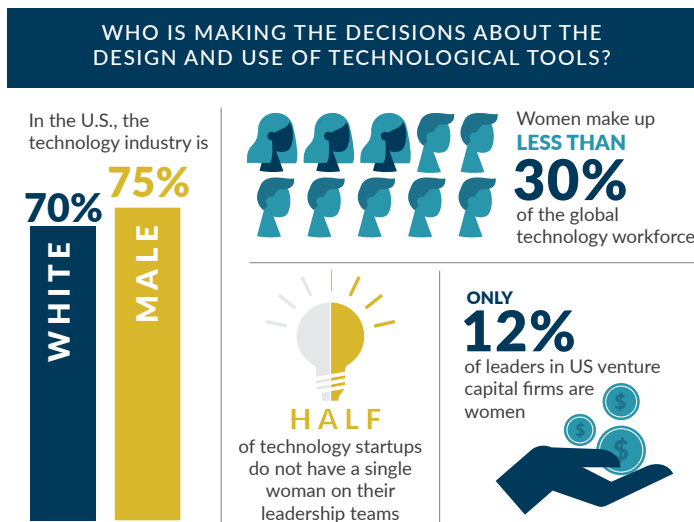
The five trends identified in this research are:

1. lack of gender parity and discriminatory organizational culture in the technology sector;
2. gender inequalities in accessing technology around the world;
3. the targeting of women on digital equipment and platforms;
4. gender gaps in data collection and analysis; and
5. gender and other biases embedded in artificial intelligence (AI).

## Trend 1 - Digital Leadership: Participation and Power in Technology Environments

As technology continues to transform lives and society, who is making the decisions about the design and use of technological tools? The answer is predominately white men. In the U.S., the technology industry is 75% male and 70% white.<sup>6</sup>

One of the most visible manifestations of gender inequality is in current technology leadership and workplaces. Statistics clearly demonstrate the underrepresentation of women (and BIPOC - black, indigenous and people of color), both within technology companies and startups as well as the venture capital firms that fund them. A number of reports have tracked these numbers in Silicon Valley and among the wider technology arena. According to the Startup Outlook Survey (2019), half of technology startups do not have a single woman on their leadership teams.<sup>7</sup> Only 12 percent of leaders in U.S. venture capital firms are women and 68 percent of these firms do not have any female partners.<sup>8</sup> The Women in Tech Index (2018), which focused on 41 countries in the Organization for Economic Cooperation and Development (OECD) and European Union (EU), the participation of women in the technology workforce was below 30 percent across all the countries surveyed.<sup>9</sup>



The problems with gender parity have a direct impact on workplace environments and how the technology sector operates. In recent years, women have started to share their experiences of discrimination and harassment in the technology sector. The behaviors and organizational cultures – the “bro culture” – has been documented in books such as *Brotopia* and in *Whistleblower: My Journey to Silicon Valley and Fight for Justice at Uber*.<sup>10</sup> Embedded gender discrimination and negative experiences of women in technology were

highlighted as a consistent theme by interviewees for this project who were working in different segments of the technology space.

Many in the technology arena are pointing to the continuing pipeline diversity problem, as fewer women and BIPOC pursue STEM/computing studies and careers. A number of initiatives have been established to address this widespread challenge, in Silicon Valley and in the global technology sector.

The Kapor Center for Social Impact, one of the organizations that was mentioned in our interviews in Silicon Valley, seeks to address the gender and racial barriers in technology education and career opportunities. In 2018, the Kapor Center released the Leaky Tech Pipeline Framework which “provides a roadmap for comprehensive interventions and solutions to increase racial and gender diversity across the tech ecosystem.” The Kapor Center report argues that representation should be a priority because of both economic and workplace needs.<sup>11</sup>

AI4ALL is a nonprofit that has taken up this baton, with the mission to make AI more diverse and inclusive. AI4ALL offers educational programs to remove barriers for underrepresented young people to get into AI.<sup>12</sup> At the international level, TechWomen, an initiative of the U.S. Department of State, supports women leaders in STEM from Africa, Central and South Asia, and the Middle East through mentorship and exchange.<sup>13</sup>

The underrepresentation of women and other identities and backgrounds in the leadership and pipeline of technology is certainly a business and workplace problem, but it has much broader implications. The exclusion or marginalization of women demonstrates that only select voices are valued in creation of technology that will impact everyone. This could be remedied by including other types of expertise and experiences, such as gender experts, when designing and creating new technologies, and technology policies.

The international peace and security domain has faced similar problems and outcomes. Peace and security decisions affect not only personal safety, but governance for all of society. Yet, the leaders, institutions and processes at the international level and in every country in the world, have remained male dominated. Between 1992 and 2018, women constituted 13 percent of negotiators, 3 percent of mediators and only 4 percent of signatories in major peace processes.<sup>14</sup> As of January 2019, only 24.3 percent of parliamentary seats globally are held by women.<sup>15</sup>

Until a broader and more diverse set of voices are at the table, contributing in a meaningful way at all levels of these organizations, it will be difficult to see aspirations for peace and human rights realized in the world. As technology becomes ubiquitous across all aspects of lives, and more intertwined with both personal and state security, a lack of

diverse participation will have far-reaching consequences. Yet gender parity alone is just one facet of the larger systemic problem. When we conducted interviews and desk research for this project, the predominant narrative in the technology sector about gender is focused on underrepresentation of women in technology careers. We must look beyond the numbers of women working in the technology sector to see the full picture of gender in the digital ecosystem.

## Trend 2 - The Global Divide: Access and Use of Technology

By 2019, more than half of the world was participating in the global digital economy.<sup>16</sup> Gender disparities, which are so pervasive in every other segment of society, have quickly translated to the digital sphere and have become a major obstacle to sustainable development. According to the International Telecommunications Union (ITU), “In 2019, the proportion of women using the Internet globally is 48 per cent, compared to 58 percent of men.”<sup>17</sup>

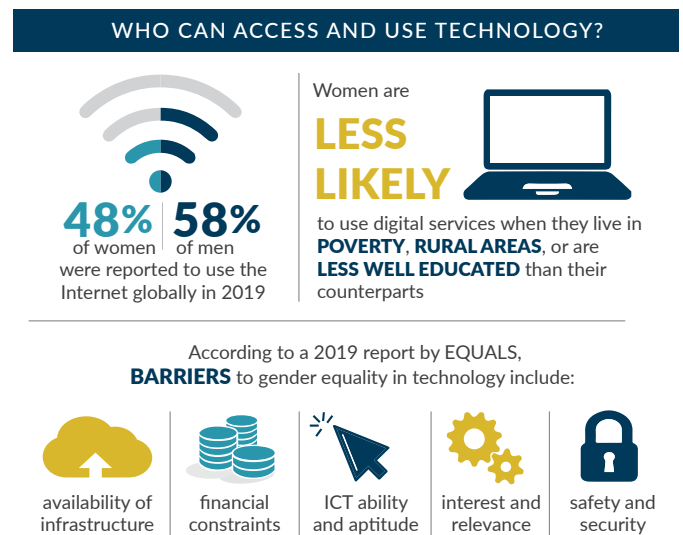
Gender inequalities in access to technology are worsened by rural-urban and education divides. A 2015 report by the World Wide Web Foundation examined ten countries - Cameroon, Columbia, India, Indonesia, Kenya, Mozambique, Nigeria, Philippines, Uganda and Egypt - and found that women were 30–50% less likely than men to use the internet to participate in public life. A study of seven countries in Africa and Asia by the Pathways for Prosperity Commission on Technology and Inclusive Development found that “women, those living in poverty or in rural areas, or those less well educated are less likely to use digital services than their counterparts.”<sup>18</sup> The COVID-19 pandemic has exacerbated existing inequalities, including gender disparities. For example, recent assessments in Pakistan and Bangladesh show women and girls have less access to online information, including on COVID-19.<sup>19</sup>

The digital gender divide is considered a critical global sustainable development challenge. In 2010, the ITU and UNESCO set up the Broadband Commission for Digital Development in response to the Millennium Development Goals (MDGs). In 2015, the body was relaunched as the ITU/UNESCO Broadband Commission on Sustainable Development in support of the UN Sustainable Development Goals (SDGs). The Commission has developed a set of targets to be achieved by 2025, and has stated that gender equality should be achieved across all targets by that time.<sup>20</sup>

EQUALS Global Partnership was established by ITU and UN Women, later joined by GSMA, UNESCO, the International Trade Centre and the United Nations University, and today includes more than 100 partners. EQUALS vision includes achieving gender equality in access and use of technologies, providing women the skills to become users and creators,

and empowering women as leaders in these arenas. EQUALS coalitions focus on access, skills, leadership and research to support these goals.<sup>21</sup>

A 2019 report by EQUALS includes a number of research findings on gender equality in these areas. The report highlights contextual findings from around the world, and recognizes the complexity of the factors that hinder gender equality in technology arenas. According to the report, barriers can include: “1) availability of infrastructure; 2) financial constraints; 3) Information Communications Technology (ICT) ability and aptitude; 4) interest and perceived relevance of ICTs; 5) safety and security; and 6) socio-cultural and institutional contexts.” Further, EQUALS notes “the gender digital divide widens as technologies become more sophisticated and expensive.”<sup>22</sup>



Much of the current conversation about the gender digital divide relates to women’s digital literacy and access to the equipment that is necessary to engage in the digital world (e.g. cell phones, etc.). Both the Broadband Commission on Sustainable Development and EQUALS Global Partnership recognize that this is not just an issue of making sure women can access the internet and are obtaining digital literacy—it is about “meaningful” access and participation in the digital ecosystem.<sup>23</sup>

Women, Peace and Security is a framework that examines what meaningful participation looks like in the peace and security context. The Women, Peace and Security agenda emerged not only in reaction to the lack of gender parity in peace and security decision-making, but also because the peace and security structures and processes were not working effectively.

The user side of technology is important, but viewing the nexus with technology solely from this perspective prevents a systems-level analysis of the digital ecosystem and whether it is reflecting the values and principles that are beneficial for peace and security for all. It is also preventing new approaches



that could bring together the technology sector, policy actors, and civil society to co-create technology solutions to the world's most pressing problems.

The fact that women are being left behind in the digital ecosystem is not just a skill and access problem. It is a fundamental flaw in the design of the system.

### Trend 3 - Cyber Abuse: Technology and Gender-Based Violence

While technology has provided important new ways to share information and perspectives, it is now widely-recognized that these tools and platforms are also being utilized by malign actors (both state and non-state). Often, tactics are used to target women and girls specifically, to discourage their participation online and to increase their insecurity. As the Broadband Commission pointed out in its 2019 report, in the U.S, 75% of victims of cyberstalking are women, and women are far more likely to be sexually harassed online than men.<sup>24</sup> International Center for Research on Women (ICRW) has defined the problem as “technology-facilitated gender based violence,” describing it as: “an action by one or more people that harms others based on their sexual or gender identity or by enforcing harmful gender norms. This action is carried out using the internet and/or mobile technology and includes stalking, bullying, sexual harassment, defamation, hate speech and exploitation.”<sup>25</sup>

*Women, Peace and Security sees women not as “users” or “beneficiaries” of the existing peace and security system, but as actors who should be shaping it.*

Cyber abuse of women manipulates cultural norms and exacerbates existing gender-based violence in society.

One of the most prominent examples of the interplay of these issues is in Pakistan. According to the Digital Rights Foundation, an NGO in Pakistan, “an overwhelming majority of victims of online harassment are women.” In a survey of women conducted by the same organization, 70% of women who responded said that they were afraid of their pictures being posted online, and 40% of women reported that they had been stalked or harassed through messaging apps.<sup>26</sup> In another survey in Pakistan, 52% of respondents knew of at least one honor killing that resulted from sexual harassment through mobile devices.<sup>27</sup> In 2016, Qandeel Baloch, a social media star in Pakistan was murdered. Her brother confessed and in 2019, he was sentenced to life in prison for the honor killing.<sup>28</sup> In May 2020, two teenage girls were victims of honor killings because a video of them was circulated on the internet without their consent.<sup>29</sup>

Technology has advanced and new technologies have been embraced so quickly that laws and policy have not caught up to adequately address the emerging range of cyber threats. For example, a number of interviewees highlighted the problem of “revenge porn” as an illustration of how online activity has become gendered. Revenge porn refers to the non-consensual distribution of intimate content online. When laws and regulations have been developed to combat online criminal activity in many countries, they often lack a gender analysis which can result in unintended harms against women and/or marginalized communities. The same problems that have always obstructed women's access to justice - ranging from discrimination and biased attitudes, to problems in law and implementation, to fear of coming forward - also apply to online gender based violence.

Online gender based violence has been a topic of increased focus by the international human rights and women's rights communities. In recent years, a number of high-level international reports and actions have highlighted concerns about violence against women in the digital realm, including the UN Special Rapporteur on the Situation of Human Rights Defenders, the Special Rapporteur on Violence Against Women, and the Special Rapporteur on Freedom of Expression.<sup>30</sup> The updated CEDAW General Recommendation No. 35 (2017) makes reference to “contemporary forms of violence occurring on the internet and digital spaces,” recognizing that gender-based violence against women occurs in all spaces and spheres of human interaction, whether public or private.

#### HOW DOES TECHNOLOGY FACILITATE GENDER-BASED VIOLENCE?



In the U.S,  
**75%**  
of victims of  
cyberstalking  
are women

#@!!%!

Women are  
**FAR MORE LIKELY**  
to be sexually harassed  
online than men

**70%** of women survey  
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Pakistan said they were afraid of  
their pictures being posted online



Organizations such as the Association for Progressive Communications' Women's Rights Programme (APC WRP) have pointed to the “chilling effects” that online gender-based violence has on women's abilities to engage online and have advocated for actions that address the multiple human rights that are impacted: “Measures that protect women online must consider multiple rights, including the right to safety, movement, to participate in public life, freedom of expression, and privacy, among others, and must take into account existing inequalities and discrimination which may affect how rights are protected and recognised.”

There has been discussion about the responsibility of the state and technology companies and platforms as duty bearers to ensure that these rights are protected. Unfortunately the attention on victimization of women on technology platforms can also be used to justify efforts to limit women's opportunity and access. According to World Pulse, some women's organizations around the world are criticizing an over-focus on women's personal cybersecurity, as it can lead to policies that are paternalistic and frame women's use of technology as requiring "protection."<sup>31</sup>

When addressing the gender based targeting that is occurring online, it is important to recognize that it is a tactic to silence and marginalize women and that this phenomenon is often related to peace and security. Research shows that gender-based violence often reflects instability in society, spiking in the lead-up to conflict and remaining at high levels when rule of law and governance is weak.<sup>32</sup> The fact that it is so prevalent online indicates that the platforms and applications have been designed with major gender blind spots, and may be contributing to broader cracks in social stability.

The Women, Peace and Security agenda includes protection of peace and security for women and girls, but also emphasizes their agency in these processes. The Women, Peace and Security framework consists of four pillars that reinforce one another. In addition to protection, they are: prevention of instability and violence, participation in all aspects of decision making, and gender mainstreaming - meaning that the various needs of all of the population should be considered.<sup>33</sup> The same four pillars should be applied in considering how to approach gender-based online violence. This would require policymakers to engage with and actively acknowledge women's agency and right to equitably participate online.

## Trend 4 - The Gender Data Gap: What is Measured and What is Ignored

Technology offers the potential to identify and address many development, humanitarian and peace and security issues through the collection and analysis of vast amounts of data. Yet, as technology has accelerated what can be done with data, it has also amplified the existing biases about what is considered important enough to measure. Despite the increasing attention on data-driven decision making and evidence-based policymaking, there are still gaping holes in the available information on how complex challenges are affecting women. In her book, *Invisible Women: Data Bias in a World Designed for Men*, Caroline Criado Perez documents the gender data gaps that permeate almost every facet of daily life, as well as responses to health, environmental, and development challenges. Perez references specific examples of how the data gender gap has consistently contributed to the exclusion of women and gender perspectives in peace and security:

*"When things go wrong - war, natural disaster, pandemic - all the usual data gaps we have seen everywhere from urban planning to medical care are magnified and multiplied. But it's more insidious than the usual problem of simply forgetting to include women. Because if we are reticent to include women's perspectives and address women's needs when things are going well, there's something about the context of disaster, of chaos, of social breakdown, that makes old prejudices seem more justified. And we're always ready with an excuse...The real reason we exclude women is because we see the rights of 50% of the population as a minority interest."*<sup>34</sup>

The global data gender gap is hindering progress on international development and peace and security goals. Equal Measures 2030, a civil society and private sector partnership, has noted the insufficient official data available and accessible on gender equality indicators. An Equal Measures survey showed that 89 percent of gender equality advocates see data as a necessity in order to achieve Sustainable Development Goals (SDGs) progress for women and girls.<sup>35</sup>

*Despite the increasing attention on data-driven decision making and evidence-based policymaking, there are still gaping holes in the available information on how complex challenges are affecting women.*

A nascent community of practice is focusing on gender data, as a number of initiatives, organizations and experts are now working to bring together best practices in data collection and analysis and start to address the gaps in available gender data around the world. Open Data Watch is an international NGO that focuses on data access and gaps through the UN Sustainable Development framework. Although the organization is not exclusively working on gender data, it has produced a number of reports that directly integrate gender analysis into regional and topical development, governance, peace and security issues.<sup>36</sup> Another example is Data2X, a platform managed through the UN Foundation that is "working through partnerships to improve the availability, quality, and use of gender data to make a practical difference in the lives of women and girls worldwide."<sup>37</sup>

### WHAT DOES "GENDER DATA" MEAN?

Gender data reflect and make visible differences in the experiences, needs, opportunities, or contributions of women and men, and girls and boys, in all areas of life.<sup>38</sup>

According to a Data2x report on human security, there are critical gaps in the data that are available on gender and security, including: information on war-related mortality and morbidity rates, forcible displacement, conflict-related sexual and gender-based violence, women's participation in peace and security processes, safety in public spaces and on transit, violence against children, and human trafficking.<sup>39</sup>

The majority of gender data efforts continue to focus on traditional datasets and data collection methods. In the Women, Peace and Security area, for example, there is a lack of quantitative data, and much of the available qualitative data comes from academic research or case studies conducted by NGOs. Governments and multilateral institutions have continued to de-prioritize gender data, yet civil society has continued to bring forward evidence of women's contributions.

Civil society has had to fill the gaps in existing data collection. Civil society has taken the initiative to document women's roles that are ignored in peacebuilding and the correlations between gender equality and peace. As policymakers continued to ask for "evidence" of the importance of Women, Peace and Security, this data provided by civil society has been instrumental to press for policy change.

Big data may offer new tools to begin to close data gaps and improve approaches to global challenges. Organizations working within the humanitarian, sustainable development and peace and security arenas have recognized the potential for big data to provide more information in real-time for faster and improved policies and programs, and gender data experts have also acknowledged the value of new types of datasets for gender equality efforts.

### WHAT IS BIG DATA?

One of the most commonly-cited definitions of big data was developed in 2001 by Gartner, a research and advisory company:

***Big data** is high-volume, high-velocity and/or high-variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision making, and process automation.*<sup>40</sup>

A report by UN Women on gender equality and big data outlined a number of gender-related SDG indicators that could benefit from the use of big data.<sup>41</sup> UN Global Pulse, which works through several labs around the world and in partnership with various UN entities to conduct research and innovation to address specific humanitarian, development and peace challenges, has partnered with UN Women on specific projects to utilize big data. For example, Pulse Lab in Jakarta,

Indonesia and UN Women created a project called After Dark to understand and develop responses to women's safety and security in transportation at night.<sup>42</sup>

There is also a recognition within the international community that the benefits of big data for peace also brings risk, especially ethical, bias, privacy and security risks, to already vulnerable populations during crisis and conflict. The UN has developed a number of policy guidelines and tools, including Data Privacy, Ethics and Protection: Guidance Note on Big Data for Achievement of the 2030 Agenda" (2017);<sup>43</sup> the UN Office for the Coordination of Humanitarian Affairs (OCHA) released Data Responsibility Guidelines (working draft) (2019) and various principles and assessments published on an ongoing basis by UN Global Pulse.<sup>44</sup> Specific, gender-related risks have been identified by UN Women, including obtaining informed consent, data bias, accessing datasets, potential harms to identifiable groups, and data security.<sup>45</sup>

Women are on the frontlines of efforts for peace and democracy around the world. This is why it is so imperative for design, collection and ownership of data to become a much more holistic and inclusive process. Data scientists alone do not have the expertise to bring to this task. As Tara Cookson, founder of Ladysmith Collective has pointed out, the expertise needs to come from feminist researchers and activists. However, they rarely sit at the same table.<sup>46</sup>

## Trend 5: The Gendered Dimensions of Artificial Intelligence - The Next Frontier

The data that is gathered, and the data that is missing or biased, is reinforced through machine learning and the algorithms that power artificial intelligence (AI). Increasingly, AI is embedded into daily life, determining finance, healthcare and justice for individuals around the world. AI is also a top priority for national security strategies and the development of defense capabilities, which will have consequences for global peace and security.

There is increasing concern in the technology community about gender and racial bias in current AI systems and data sets that underpin them. AI efforts are largely gender blind, and are not designed in inclusive, gender sensitive and culturally sensitive ways. Thus, gender, racial, social and economic biases are already built into the big data systems that are becoming ubiquitous across society. The humans who design and program algorithms are mostly white and male, and they have embedded both conscious and unconscious bias throughout the systems.

Female experts in the digital arena (e.g. computer scientists and mathematicians) are identifying, researching and highlighting these issues. As Cathy O'Neil observed in her book, *Weapons of Math Destruction: How Big Data*



*Increases Inequality and Threatens Democracy:* “The math-powered applications powering the data economy were based on choices made by fallible human beings. Some of these choices were no doubt made with the best intentions. Nevertheless, many of these models encoded human prejudice, misunderstanding, and bias into the software systems that increasingly managed our lives.”<sup>47</sup>

Joy Buolamwini is the lead author of one of the most influential studies on AI gender and racial bias, the Gender Shades Project. This project explored gender classification systems of three major corporations. The findings showed that “darker-skinned females are the most misclassified group (with error rates of up to 34.7%). The maximum error rate for lighter-skinned males is 0.8%.” The research paper from the study goes on to state that these biases in facial analysis algorithms “require urgent attention.”<sup>48</sup> Buolamwini’s trailblazing work on AI bias and its implications for society led her to form the Algorithmic Justice League (AJL). According to its website, AJL’s mission “is to raise public awareness about the impacts of AI, equip advocates with empirical research to bolster campaigns, build the voice and choice of most impacted communities, and galvanize researchers, policymakers, and industry practitioners to mitigate AI bias and harms.”<sup>49</sup>

The biases can directly affect health, safety and personal security in gendered ways. When Apple launched Siri, the system did not recognize the sentence, “I was raped.” It was not part of the AI programming.<sup>50</sup> A report by UNESCO and Equals specifically examined digital voice assistants that are gendered as female. The report highlights the problem of AI acquiring negative cultural stereotypes through the machine learning process.

For example, when Microsoft developed a chatbot and used Twitter posts as data for training the algorithm<sup>51</sup>, within 15 hours the program started to refer to feminism as a “cult” and a “cancer.” These digital assistants are often programmed with subservience, even when harassing language is used.

“Companies like Apple and Amazon, staffed by overwhelmingly male engineering teams, have built AI systems that cause their feminized digital assistants to greet verbal abuse with catch-me-if-you-can flirtation.”<sup>52</sup> The UNESCO/Equals report itself was named “I’d Blush if I Could,” because this was Apple Siri’s response to “You’re a bitch.”

The algorithm and big data designs and decisions have broader repercussions for Women, Peace and Security. Privacy standards and protections are not universal, and the process of collecting big data and ownership of the data are not always transparent. In the hands of authoritarian regimes or extremist groups, data and algorithms can be used for surveillance of human rights activists and to target civil society organizations. The development of AI in the defense and security space

without gender analysis presents many concerns. As a commentary in the International Committee of the Red Cross (ICRC) blog observed, “When it comes to armed conflict, data management will be considerably more difficult. If there is bias in civil society, just imagine the kinds of bias that will be built into algorithms being delegated with life and death decisions in conflict zones where we have little or no proper understanding of the cultures involved. Given the enormous challenges we are already facing in trying to develop fair and just AI systems, the chances of justice in civilian laden conflict zones is vanishingly small.”<sup>53</sup>

## WHAT ARE ALGORITHMS?

According to an explanation from Pew Research Center, Internet and Technology:

*Algorithms are instructions for solving a problem or completing a task. Recipes are algorithms, as are math equations. Computer code is algorithmic. The internet runs on algorithms and all online searching is accomplished through them. Email knows where to go thanks to algorithms. Smartphone apps are nothing but algorithms. Computer and video games are algorithmic storytelling. Online dating and book-recommendation and travel websites would not function without algorithms. GPS mapping systems get people from point A to point B via algorithms. Artificial intelligence (AI) is naught but algorithms. The material people see on social media is brought to them by algorithms. In fact, everything people see and do on the web is a product of algorithms. Every time someone sorts a column in a spreadsheet, algorithms are at play, and most financial transactions today are accomplished by algorithms. Algorithms help gadgets respond to voice commands, recognize faces, sort photos and build and drive cars. Hacking, cyberattacks and cryptographic code-breaking exploit algorithms. Self-learning and self-programming algorithms are now emerging, so it is possible that in the future algorithms will write many if not most algorithms.*<sup>54</sup>

Unfortunately, the conversations about gender inequality in data and AI that are happening in the technology sector, the peace and security policymaking arena, and within the global gender equality community remain separate. On one hand, there are ground-up efforts by researchers and technology experts to highlight the biases that are already baked into algorithms. On the other hand, there are conversations within the global gender equality community about the opportunities to utilize big data to address the persistent gender data gap, and the perils that these technology innovations may present

to women and other activists if they are manipulated by malign actors. Meanwhile, the race for AI in the national security space is accelerating, and the development of AI for security and defense is happening without integration of gender analysis. The failure of these communities and lines of conversation to come together presents a perilous situation for women - and for peace and security.

## IV. NEXT STEPS

Gender inequality is deeply embedded into society and it is prevalent across countries and cultures. It is not surprising that gender inequality has swiftly been replicated in the design and creation of our new digital worlds. This has a negative impact on women but also has broader ramifications for the future of peace and security. As in the peace and security arena, gendered dynamics are often signals of wider instability and systemic failure. Gender inequalities in the digital ecosystem should not be considered on an *ad hoc* basis or as marginal issues of concern.

The decisions that are made about technology design and governance today will shape broader opportunity, security, justice and governance structures for decades to come.

### KEY FINDINGS

1. The digital ecosystem is reflecting and amplifying existing gender inequalities in society.
2. Women are experiencing systemic bias and abuse in technology leadership, creation, and use, which plays out in both the digital and physical spaces.
3. The repeating gendered problems in the digital ecosystem are an early warning indicator of systemic weaknesses and failures of the current policies.
4. There is a lack of understanding of gender dynamics and their significance for the future of technology development as well as technology and policy-making.
5. When gender equality challenges are recognized, they are considered in specific sectors or issue contexts. This is creating siloed conversations and preventing coordinated advocacy and action. The focus is often on women as users of technology, rather than agents of change in improving or designing the digital ecosystem.
6. There is a lack of awareness about existing international human rights and gender equality frameworks among those working in the technology space.
7. Civil society and gender experts are absent from many of the influential processes and debates about the future of technology.

## ENDNOTES

- 1 USAID Digital Strategy 2020-2024. Available at <https://www.usaid.gov/usaid-digital-strategy>
- 2 For more description of the concept of human security, see <https://www.un.org/humansecurity/what-is-human-security/>
- 3 Valerie M. Hudson, et al. "The Heart of the Matter: The Security of Women and the Security of States." *International Security*, Vol. 33, No. 3 (Winter 2008/09), pp. 7–45. Article can be accessed at: [https://www.belfercenter.org/sites/default/files/publication/IS3303\\_pp007-045.pdf](https://www.belfercenter.org/sites/default/files/publication/IS3303_pp007-045.pdf)
- 4 For more information on the UN Security Council Resolution 1325 that established the international commitments on Women, Peace and Security, please see [https://www.usip.org/gender\\_peacebuilding/about\\_UNSCR\\_1325](https://www.usip.org/gender_peacebuilding/about_UNSCR_1325)
- 5 For more information on the U.S. Women, Peace and Security Act and the legal requirements for the White House and federal agencies, please see [https://oursecurefuture.org/sites/default/files/Policy%20Brief-WPS-101\\_digital.pdf](https://oursecurefuture.org/sites/default/files/Policy%20Brief-WPS-101_digital.pdf)
- 6 "The Leaky Tech Pipeline: A Comprehensive Framework for Understanding and Addressing the Lack of Diversity across the Tech Ecosystem." <https://www.kaporcenter.org/the-leaky-tech-pipeline-a-comprehensive-framework-for-understanding-and-addressing-the-lack-of-diversity-across-the-tech-ecosystem/>
- 7 Silicon Valley Bank. "Women in Technology Leadership 2019: Key insights from the Silicon Valley Bank Startup Outlook Survey." [https://www.svb.com/globalassets/library/uploadedfiles/content/trends\\_and\\_insights/reports/women\\_in\\_technology\\_leadership/svb-suo-women-in-tech-report-2019.pdf](https://www.svb.com/globalassets/library/uploadedfiles/content/trends_and_insights/reports/women_in_technology_leadership/svb-suo-women-in-tech-report-2019.pdf)
- 8 See <https://www.allraise.org/>
- 9 HoneyPot. "2018 Women in Tech Index." <https://www.honeypot.io/women-in-tech-2018/>
- 10 See Emily Chang. *Brotopia: Breaking Up the Boys' Club of Silicon Valley*. Portfolio: 2019. See Susan Fowler. *Whistleblower: My Journey to Silicon Valley and Fight for Justice at Uber*. Viking: 2020.
- 11 Leaky Tech Pipeline report, *supra*.
- 12 See AI4A website at <https://ai-4-all.org/>
- 13 See TechWomen website at <https://www.techwomen.org/>
- 14 Council on Foreign Relations. <https://www.cfr.org/womens-participation-in-peace-processes/>
- 15 UN Women. *Peace and Security Facts and Figures*. <https://www.unwomen.org/en/what-we-do/peace-and-security/facts-and-figures>
- 16 Broadband Commission for Sustainable Development, "The State of Broadband: Broadband as a Foundation for Sustainable Development" (September 2019), available at [https://www.itu.int/dms\\_pub/itu-s/opb/pol/S-POL-BROADBAND.20-2019-PDF-E.pdf](https://www.itu.int/dms_pub/itu-s/opb/pol/S-POL-BROADBAND.20-2019-PDF-E.pdf)
- 17 International Telecommunications Union. *Backgrounders: Bridging the Gender Divide*. <https://www.itu.int/en/mediacentre/backgrounders/Pages/bridging-the-gender-divide.aspx#:~:text=Challenges%20and%20solutions-,A%20substantial%20divide%20persists%20between%20women%20and%20men%20and%20between,gap%20is%2017%20per%20cent.>
- 18 Pathways for Prosperity Commission. (2018). *Digital Lives: Meaningful Connections for the Next 3 Billion*. Oxford, UK: Pathways for Prosperity Commission. <https://pathwayscommission.bsg.ox.ac.uk/digital-lives-report>
- 19 UN Women, "Will the Pandemic Derail Hard Won Progress on Gender Equality?" (2020). <https://www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2020/spotlight-on-gender-covid-19-and-the-sdgs-en.pdf?la=en&vs=5013>
- 20 Broadband Commission for Sustainable Development. *The State of the Broadband report*, *supra*.
- 21 See <https://www.equals.org/>
- 22 "Taking Stock: Data and Evidence on Gender Equality in Digital Access, Skills and Leadership." EQUALS Research Coalition (2019). <https://www.equals.org/>
- 23 *Ibid.*
- 24 *The State of the Broadband report*, *supra*.
- 25 Hinson L, Mueller J, O'Brien-Milne L, Wandera N. "Technology-Facilitated Gender-Based Violence: What is it and How do We Measure It." ICRW (2018) <https://www.icrw.org/publications/technology-facilitated-gender-based-violence-what-is-it-and-how-do-we-measure-it/>
- 26 Digital Rights Foundation. "Online Violence Against Women in Pakistan: Submission to UNSR on Violence Against Women." <https://digitalrightsfoundation.pk/wp-content/uploads/2017/12/UNSR-Submission-by-DRF.pdf>. See also, <https://digitalrightsfoundation.pk/>
- 27 Hassan, B., Unwin, T., & Gardezi, A. (2018). Understanding the darker side of ICTs: Gender, sexual harassment, and mobile devices in Pakistan. *ITI* vol. 14.
- 28 Salman Masood. "Brother of Qandeel Baloch, Pakistani Internet Star, Gets Life Term for Her Murder." *New York Times* (Sept. 27, 2019) <https://www.nytimes.com/2019/09/27/world/asia/qandeel-baloch-brother.html>
- 29 Zofeen T. Ebrahim. "Pakistan's 'honour killings' show women need digital skills, says Facebook adviser." *Reuters*. (May 21, 2020). <https://www.reuters.com/article/us-pakistan-women-internet/pakistans-honour-killings-show-women-need-digital-skills-says-facebook-adviser-idUSKBN22X1R9>
- 30 See The 2019 report of the Special Rapporteur on the situation of human rights defenders. See The 2018 annual report of the Special Rapporteur on violence against women focuses on online violence against women and girls.
- 31 Project Interview (May 29, 2019).
- 32 See UN Human Rights, Office of the Higher Commissioner at <https://www.ohchr.org/EN/Issues/Women/WRGS/Pages/PeaceAndSecurity.aspx>
- 33 See <https://oursecurefuture.org/blog/back-basics-women-peace-and-security-mandate-four-pillars-part-i>

- 34 Caroline Criado Perez. *Invisible Women: Data Bias in a World Designed for Men*. New York: 2019, pgs 289-290.
- 35 “Harnessing the Power of Data for Gender Equality.” *Equal Measures 2030* (2019) [https://www.equalmeasures2030.org/wp-content/uploads/2019/07/EM2030\\_2019\\_Global\\_Report\\_English\\_WEB.pdf](https://www.equalmeasures2030.org/wp-content/uploads/2019/07/EM2030_2019_Global_Report_English_WEB.pdf)
- 36 See <https://opendatawatch.com/publications/>
- 37 See <https://data2x.org/about-us/>
- 38 *Building Alliances for Gender Equality: How the Tech Community Can Strengthen the Gender Data Ecosystem – Ladysmith* (2018). <https://ladysmithcollective.com/report-building-alliances-for-gender-equality/>
- 39 Data 2x. “Mapping Gender Data Gaps in Human Security: An SDG Era Update.” [https://data2x.org/wp-content/uploads/2020/03/MappingGenderDataGaps\\_Security.pdf](https://data2x.org/wp-content/uploads/2020/03/MappingGenderDataGaps_Security.pdf)
- 40 See <https://www.gartner.com/en/information-technology/glossary/big-data>
- 41 UN Women. “Gender Equality and Big Data. Making Gender Data Visible” (2018). <https://unglobalpulse.org/wp-content/uploads/2018/03/Gender-equality-and-big-data-en-2018.pdf>
- 42 Pulse Lab Jakarta. *After Dark: Encouraging safe transit for women travelling at night* (2019). <https://www.unglobalpulse.org/project/after-dark-encouraging-safe-transit-for-women-travelling-at-night/>
- 43 United Nations Development Group. “Data Privacy, Ethics and Protection: Guidance Note on Big Data for Achievement of the 2030 Agenda.” <https://unsdg.un.org/resources/data-privacy-ethics-and-protection-guidance-note-big-data-achievement-2030-agenda>
- 44 See <https://www.unglobalpulse.org/policy/>
- 45 UN Women. *Gender Equality and Big Data*, supra.
- 46 *Building Alliances for Gender Equality: How the Tech Community Can Strengthen the Gender Data Ecosystem – Ladysmith* (2018). <https://ladysmithcollective.com/report-building-alliances-for-gender-equality/>
- 47 Cathy O’Neil. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. Broadway Books: 2017.
- 48 Joy Buolamwini and Timnit Gebru. “Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification.” *Proceedings of Machine Learning Research* 81:1–15, 2018 <http://proceedings.mlr.press/v81/buolamwini18a/buolamwini18a.pdf>. See also <http://gendershades.org/overview.html>. See also, [https://www.ted.com/talks/joy\\_buolamwini\\_how\\_i\\_m\\_fighting\\_bias\\_in\\_algorithms](https://www.ted.com/talks/joy_buolamwini_how_i_m_fighting_bias_in_algorithms)
- 49 See <https://www.ajl.org/about>
- 50 Perez, *Invisible Women* supra.
- 51 “In data science, an algorithm is a sequence of statistical processing steps. In machine learning, algorithms are ‘trained’ to find patterns and features in massive amounts of data in order to make decisions and predictions based on new data.” IBM Cloud Learn Hub, *Machine Learning* (July 15, 2020). <https://www.ibm.com/cloud/learn/machine-learning>
- 52 UNESCO and EQUALS. “I’d Blush if I Could: Closing Gender Divides in Digital Skills through Education.” (2019). <https://unesdoc.unesco.org/ark:/48223/pf0000367416.page=1>
- 53 Sharkey, Noel. “The Impact of Gender and Race Bias in AI.” *ICRC. Humanitarian Law & Policy*. (Aug. 28, 2018). <https://blogs.icrc.org/law-and-policy/2018/08/28/impact-gender-race-bias-ai/>
- 54 Lee Rainie and Janna Anderson. “Code-Dependent: Pros and Cons of the Algorithm Age.” (Feb 8, 2017) <https://www.pewresearch.org/internet/2017/02/08/code-dependent-pros-and-cons-of-the-algorithm-age/>. See full article for a number of trends that Pew Research Center identified regarding the spread of algorithms.



## ONE EARTH FUTURE

[oneearthfuture.org](http://oneearthfuture.org)     

ONE EARTH FUTURE fosters sustainable peace by partnering with innovative world leaders, global development agencies and communities to see complex problems at the root of armed conflict in new ways and solve them together through orchestrated collaboration.



## OUR SECURE FUTURE

[oursecurefuture.org](http://oursecurefuture.org) 

Our Secure Future: Women Make the Difference (OSF) is a program of the Colorado-based One Earth Future Foundation. OSF works to strengthen the Women, Peace and Security movement to enable effective policy decision-making for a more peaceful world.

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Women Make the Difference

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